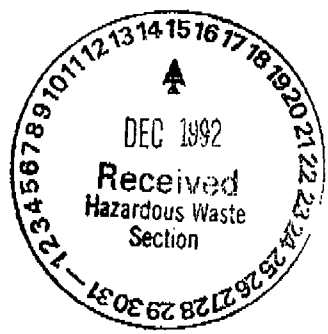
- Doc. Ex. 334 -

Closure Certification
Asheville Dyeing and Finishing
Swannanoa, North Carolina
EPA ID NCD070619663
December 11, 1992



Prepared For

Asheville Dyeing and Finishing
Swannanoa, North Carolina

For Submittal To

North Carolina Department of Environment, Health,
and Natural Resources
Division of Solid Waste Management
Hazardous Waste Section
Raleigh, North Carolina

Prepared By

Aquaterra, Inc.
Raleigh, North Carolina

AQUATERRA

AQUATERRA

Environmental Consultants

December 11, 1992

Mr. Jerome Rhodes
North Carolina Department of Environment, Health,
and Natural Resources
Division of Solid Waste Management
Hazardous Waste Section
Post Office Box 27687
Raleigh, North Carolina 27611-7687

Reference: Closure Certification - EPA ID NCD070619663
Asheville Dyeing and Finishing
Swannanoa, North Carolina
Aquaterra Job No. 901

Dear Mr. Rhodes:

Based on the information I have reviewed and the construction activities that were observed under my direct supervision, the closure plan for the Asheville Dyeing and Finishing (AD&F) facility located in Swannanoa, North Carolina, has been implemented and completed in substantial accordance with the approved closure plan. This report discusses closure activities and any deviations noted during implementation. All activities were monitored throughout the implementation of the closure plan. This certification is being submitted to demonstrate that, to the best of my abilities, due care and diligence was used to adhere to the approved closure plan and was implemented within substantial compliance and intent of the approved closure plan. For clarification, the following documents constitute the approved closure/post-closure plan for AD&F:

- Roy F. Weston's *Closure/Post-Closure Plan*, dated March 31, 1992
- Aquaterra's *Addendum of Closure/Post-Closure Plan*, dated May 11, 1992
- North Carolina Department of Environment, Health, and Natural Resources, Division of Solid Waste Management correspondence, dated July 8, 1992
- Aquaterra's *Addendum of Closure/Post-Closure Plan*, dated September 2, 1992

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I am familiar with the referenced documents and subsequent activities discussed in the closure plan. If you have any questions, please contact me at (919) 859-9987.

Sincerely,

AQUATERRA, INC.

Kenneth L. Jesneck, P.E.
Project Manager/Senior Engineer

ASHEVILLE DYEING and FINISHING

James Williams
Plant Manager

Senior Peer Review By

Kirk B. Pollard
Senior Project Manager

NORTH CAROLINA PROFESSIONAL SEAL 18498 ENGINEER KENNETH L. JESNECK 12-15-92

KLJ/cbb

cc: Mr. Steve Pegg–Asheville Dyeing and Finishing
Ms. Yvonne Bailey–Womble, Carlyle, Sandridge & Rice

AQUATERRA

Closure Certification
Asheville Dyeing and Finishing
Swannanoa, North Carolina
EPA ID NCD070619663
December 11, 1992

1 Introduction

Asheville Dyeing and Finishing (AD&F) has contracted with Aquaterra, Inc. (Aquaterra) to implement the approved closure plan to meet the requirements of an Administrative Order on Consent (Order). The Order was executed on August 29, 1990, between AD&F and the North Carolina Department of Environment, Health, and Natural Resources (NCDEHNR), Division of Solid Waste Management (DSWM). The AD&F facility is located on Warren Wilson College Road in Swannanoa, Buncombe County, North Carolina (see Figure 1).

The purpose of this report is to certify that the closure of the facility has been conducted according to the specifications in the approved closure plan. The closure plan was prepared in accordance with Title 40 of the Code of Federal Regulations (40 CFR) Part 265.112 (a), codified at Title 15A of the North Carolina Administrative Code (NCAC) Section 13A .00110. For clarification, the following documents constitute the approved closure plan for AD&F:

- Roy F. Weston's *Closure/Post-Closure Plan*, dated March 31, 1992
- Aquaterra's *Addendum of Closure/Post-Closure Plan*, dated May 11, 1992
- North Carolina Department of Environment, Health, and Natural Resources, Division of Solid Waste Management, correspondence, dated July 8, 1992
- Aquaterra's *Addendum of Closure/Post-Closure Plan*, dated September 2, 1992

The facility was closed as described in 40 CFR Subpart G, Part 265.111, in a manner that

- minimizes the need for further maintenance,
- controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground or surfaces or to the atmosphere, and
- complies with the closure requirements of this subpart including, but not limited to, the requirements of 40 CFR parts 265.197, 265.228, 265.258, 265.280, 265.310, 265.351, 265.381, and 265.404.

The closure plan was prepared to comply with the applicable provisions of 40 CFR Parts 265.197 and 265.310. These sections describe closure and post-closure activities for a tank system and landfill, respectively.

2 Closure Methodology

2.1 Closure of the Tank System

As presented in the closure plan, the waste management unit (Unit) consisted of a 2,000-gallon waste tetrachloroethene (PCE) tank and associated piping. On March 23, 1985, the waste PCE tank and a virgin PCE tank were excavated, and the resulting pits were backfilled. Apparently, no soil was removed for off-site disposal during this activity. The piping system was left intact. These closure activities only involve the waste PCE tank.

2.2 Closure Activities

2.2.1 Closure Performance Standards

Based on the results of previous site investigations, the extent of PCE in the soils appears to be confined to the former waste tank pit. A series of site activities were developed that were implemented for closure of the Unit as a landfill. These activities were conducted in accordance with 40 CFR Part 265.310 and include the following:

- Excavation of existing tank system piping.
- Excavation of soils within the confines of the former tank pit.
- Analytical testing to determine hazardous waste classification.
- Disposal of the soil at a permitted hazardous waste landfill, if necessary.
- Backfilling excavated areas with clean fill.
- Placement of a non-select fill material in the pit to support the clay cap.
- Installation and compaction of a clay cover that exhibits a permeability less than or equal to the natural subsoils underlying the Unit.
- Installation of a topsoil cover and establishment of a vegetative stand.

2.2.2 Excavation Activities

2.2.2.1 Piping System

On October 13, 1992, site activities were initiated by excavation of the soil with a trackhoe to expose the tank system piping. Four Seasons Industrial Services, Inc. was contracted for removal and construction activities. Two pipes were located in the trenches (i.e., one pipe associated with the former virgin PCE tank, and the other associated with the to the former waste PCE tank). Excavations extended laterally and vertically a distance of approximately 1 foot around the piping; however,

activities ceased in the vicinity of the water and natural gas lines. Piping in these areas were pulled horizontally from beneath the water and gas lines (see Figure 2). The piping was then cut into approximately 4-foot lengths and containerized for transit to a permitted landfill.

During excavation, the soil was periodically monitored with an organic vapor analyzer (OVA) to determine whether a release had occurred. The excavated soil was placed along the side of the trenches. The OVA readings were all less than 1 part per million (ppm). After removal of the pipes, confirmatory soil samples were collected from each of the three segments of the exposed trenches. Since no leaks were apparent in the piping system, only one sample was collected from each segment. The trenches were then backfilled with the previously excavated material (see photographs in Attachment A).

Soil samples PS-1, PS-2, and PS-3 were collected from the bottom of their respective trench segments using a stainless steel scoop. Each soil sample was transferred to a glass container with a teflon-lined cap and was stored on ice at 4° C until delivery to the analytical laboratory. Sample identification, chain-of-custody, and shipment protocols were followed as outlined in the approved sampling and analysis plan for AD&F. Each sample was analyzed for volatile organic compounds (VOCs) in accordance with SW-846 Method 8240.

The analytical results indicate that PCE was detected in samples PS-1, PS-2, and PS-3 at concentrations of 59 μg/kg, 62 μg/kg, and 25 μg/kg, respectively (see Table 1 and Attachment B). Sample PS-2 exhibited concentrations of acetone (110 μg/kg), 1,2-dichloroethane (280 μg/kg), and trichloroethene (96 μg/kg). Acetone can be attributed to either the equipment decontamination procedures, as evidenced by field blank (FB-1) with a concentration of 52 μg/L or laboratory contamination (92 μg/L). Trichloroethene and 1,2-dichloroethane have been documented as breakdown or daughter products of PCE.

2.2.2.2 Former Tank Pit

Subsequent to piping removal activities, the former pit was visually identified by the depression left after previous pit backfilling. The soil from the former tank area was excavated with a trackhoe and placed directly into dump trucks, supplied by Laidlaw, Inc., for direct transportation to their hazardous waste disposal facility located in Pinewood, South Carolina (see photographs in Attachment A). The excavation of the soil continued until the contents of the former tank pit plus 1 foot horizontally into the native soil and vertically to the approximate water table was removed. The final pit dimensions were 9 feet wide by 14.5 feet long by 17 feet deep, for a total of approximately 82 cubic yards of soil. Copies of the completed manifests are located in Attachment C. Previously accumulated cuttings fromthe monitoring well installations were included in the disposal manifest.

Confirmatory soil samples were collected with the trackhoe bucket from each wall of the pit at 10 to 11 feet below ground surface and at the midway point along each side for a total of four samples. The soil was sampled from the middle of the trackhoe bucket from each location using a stainless steel scoop. Prior to sampling, a representative portion was obtained and measured with the OVA to obtain an

indication of contamination. Subsequently, a representative sample from the trackhoe bucket was transferred to a glass container with a teflon-lined cap, and stored on ice at 4° C until delivered to the analytical laboratory. Sample identification, chain-of-custody, and shipment protocols were followed as outlined in the approved sampling and analysis plan for AD&F. Each sample was analyzed for VOCs in accordance with SW-846 Method 8240.

The samples were identified as UST-1 (south wall), UST-2 (west wall), UST-3 (north wall), and UST-4 (east wall) (see Figure 2). The OVA readings for UST-1, UST-2, UST-3, and UST-4 were 1, 2, 10, and 100+ parts per million (ppm), respectively.

The analytical results of the samples indicate that PCE was detected in samples UST-1 and UST-4 at concentrations of 54 µg/kg and 490,000 µg/kg, respectively (see Table 2 and Attachment B). The PCE concentration for sample UST-2 was below detection limits as were the remaining VOCs of the other two samples. Sample UST-3 was broken during transportation to the laboratory; therefore, the sample could not be analyzed.

2.2.3 Final Cover Construction

2.2.3.1 Subgrade Backfilling

Prior to backfilling activities, polyethylene sheeting was draped on the east wall of the excavation to provide a barrier to divide the natural soil from the backfill material in the event additional excavation was deemed necessary in that area. The sheeting extended approximately 3 feet horizontally over the east wall to minimize surface water from infiltrating through the impacted soil. The excavated pit was restored by backfilling with crusher run stone to a depth of approximately 2.5 feet below grade surface (see Figure 3). The stone was dumped directly into the pit and was spread evenly in approximately 2-foot layers. Each 2-foot lift was tamped with the bucket of the trackhoe. Stone placement and compaction continued until a stable final grade was achieved. Approximately 70 cubic yards of crusher run was placed in the excavated pit.

A representative sample of the crusher run was collected and analyzed in accordance with Toxicity Characteristics Leaching Procedure (TCLP) protocols for metals and organics prior to being placed into the pit. The analytical results indicated that no TCLP constituent concentration was greater that its respective threshold level (see Attachment D). Barium was the only compound detected in the TCLP extract at a concentration of 1.74 mg/L.

2.2.3.2 Clay Layer

The construction of the cover continued by placing a 2-foot clay layer above the crusher run. The clay was spread on the crusher run with the bucket of the trackhoe in lifts that did not exceed 8 inches. Compaction of the clay was achieved by tamping with the bucket of the trackhoe and passing over each lift with the tracks of the excavator. The final elevation of the clay layer was approximately 0.5 feet below natural grade (see Figure 3).

The density of the clay layer was determined in the field according to the modified Proctor procedure (ASTM D 1557). GeoTechnologies, Inc., was subcontracted to perform the density tests (see Attachment E). The results of the modified Proctor test indicate that the in situ density was compacted to 91.6 percent modified Proctor. Additionally, a standard Proctor (ASTM D 698) was performed in their laboratory with the compaction effort achieving 97.1 percent.

The closure plan required that the permeability standard of the clay layer be less than or equal to the natural subsoils of the Unit. To determine the permeability of the subsoils, a 6-foot deep pit was excavated adjacent to the Unit. The sides of the pit were sloped sufficiently to provide safe access into the pit. A double-ring infiltrometer test (ASTM D 3385-75) was used to measure the permeability of the subsoil as well as the permeability of the clay layer on the unit. Each location was presoaked during the previous night before the tests were initiated. The permeability of the natural subsoil was determined to be approximately 1 inch per hour (7.1×10^{-4} cm/sec) (see Attachment F). The permeability of the clay layer was calculated to be 0.06 inches per hour (4.3×10^{-5} cm/sec), which correspondences to an order of magnitude less than the subsoil. Upon completion of the permeability tests, the subsoil test pit was backfilled. The surface of the clay layer was repaired by replacing the clay and hand tamping.

2.2.3.3 Topsoil Layer

Topsoil was mounded over the clay layer at an approximate thickness of 24 inches in the center and was sloped outward in all directions. The final slope ranges from 3 percent to 5 percent and tapers out approximately 5 feet beyond the edge of the pit in all directions (see Figure 3).

The topsoil was prepared by adding dolomitic lime and 10-10-10 fertilizer at rates of 2,000 pounds per acre (lbs./acre) and 1000 lbs/acre, respectively. Kentucky 31 Fescue was applied at a rate of 60 lbs./acre and was mixed with a rye grain at a rate of 25 lbs./acre. Straw mulch was spread at a rate of 2,000 lbs./acre to protect the seed as it germinates.

2.3 Closure Plan Discrepancies

Several discrepancies were noticed in the approved closure plan (Weston's March 31, 1992, document) and presents conflicting information for closure activities related to final cover construction. Section 2.2.3 discusses the final cover design and methods of construction, and refers to a figure showing cross-sections of the cover. The excavation activities, discussed in Section 2.2.1.2, require that the excavation extend laterally approximately 1-foot beyond the limits of the former pit. These two sections agree that the walls of the pit are vertical before backfilling. The discrepancy occurs in Section 2.2.3.1 of the plan that states *the clay layer as designed extends beyond the limits of the former tetrachloroethene tank pit by approximately five feet in each direction.* These two specifications are in direct conflict with each other since the clay layer will be confined to the vertical pit. Since the regulations pertaining to closure as a landfill require that migration of water through the Unit be minimized, construction as described in Section 2.2.1.2 with the corresponding figure was used as the methodology for closure.

Another discrepancy occurs in Section 2.2.3.3. The narrative states that the clay layer be constructed with a 3 percent minimum slope to promote drainage away from the site. However, Figure 2 referred to in Section 2.2.2.1 does not indicate any mound for the clay layer; rather the topsoil is mounded to promote drainage. Because the clay layer cannot be inspected after the topsoil has been placed on the Unit, the topsoil was mounded.

The minimum compaction effort required for the clay layer has dual specifications. Section 2.2.3 states that the clay be compacted to at least 90 percent modified Proctor while Figure 2 requires compaction to at least 95 percent of maximum dry density using the standard Proctor test. Based on the subcontractors report, the compaction of the clay has satisfied both requirements; therefore, this discrepancy does not affect the closure activities.

The closure plan does not specify remediation endpoints for soil. Aquaterra assumed that a total VOC concentration of less than 1 mg/kg in the soil from the piping system would not require further action. No provisions were provided in the closure plan that requires that soils in excess of any established action levels would be removed during excavation; therefore, all excavation activities were limited to the requirements of the plan. In the event that contamination is detected, Aquaterra suggests the impacts to soil be addressed during post-closure care.

3 Quality Assurance/Quality Control Measures

3.1 Quality Assurance Sampling

The effectiveness of decontamination procedures was monitored each day equipment was used as required by the closure plan. Samples were collected by rinsing field decontaminated equipment with distilled water and submitting the rinse water to the analytical laboratory. Since the field operations consisted of two consecutive days, a sample was collected from each daily field decontamination event and were labelled as DC-1 and DC-2. The samples were submitted for VOC analysis according to SW-846 Method 8240. The analytical results for both samples indicated that no VOCs were detected in the samples (see Attachment B).

The supply of distilled water used for decontamination was sampled as a field blank to determine the presence of VOCs and was identified as FB-1. Acetone was the only VOC detected in the sample at a concentration of 52 μg/L. However, acetone was also detected in the laboratory method blank at 92 μg/L.

3.2 Decontamination Procedures

The decontamination procedures employed during the field sampling were performed in accordance with the intended use of the sampling equipment. For sampling equipment constructed of stainless steel, teflon, or metal that came in direct contact with the sample media, the procedure adhered to the protocols presented in the sampling and analysis plan and are summarized below:

- thoroughly rinsed with tap water

- thoroughly washed with phosphate-free detergent
- thoroughly rinsed with tap water
- thoroughly rinsed with distilled water
- thoroughly rinsed with 2-propanol
- wrapped in aluminum foil

3.3 Waste Disposal

All decontamination fluids were controlled and contained at all times in the designated staging area. All fluids were collected in one 55-gallon drum, labelled, and transferred to a fenced and locked holding area.

A representative sample was collected from the drum (DS-3) and was submitted to an analytical laboratory for VOC analysis according to SW-846 Method 8240. The results of the sample indicated a concentration of 1,500 μg/L of methylene chloride and 88,000 μg/L of acetone. This drum will be pumped into the 2,000-gallon tank on-site used for well purge water and will be treated with air. After treatment the water will be discharged to the sewer as approved by the metropolitan sewerage district.

4 Conclusion and Recommendations

AD&F has submitted a closure plan that has subsequently been approved by the NCDEHNR, DSWM. The following documents are referenced as the approved closure plan:

- Roy F. Weston's *Closure/Post-Closure Plan*, dated March 31, 1992
- Aquaterra's *Addendum of Closure/Post-Closure Plan*, dated May 11, 1992
- North Carolina Department of Environment, Health, and Natural Resources, Division of Solid Waste Management correspondence, dated July 8, 1992
- Aquaterra's *Addendum of Closure/Post-Closure Plan*, dated September 2, 1992

Construction activities commenced on October 13, 1992, to implement the provisions of the approved closure plan. The associated piping with the former PCE virgin and waste tanks were located and removed. Confirmatory soil sampling indicated that the concentrations of PCE are less than the action level of 1,000 μg/kg that DSWM typically uses. The former waste tank confirmatory soil sampling indicated that residual concentrations remain in the native soils on at least two sides of the Unit. Aquaterra recommends that the concentration of PCE be verified by collecting another representative sample from the east wall. Remediation of the residual concentrations of PCE will be addressed during post-closure care since the volume of impacted soil could not be determined during closure. The cover system was constructed in such a manner that post-closure impact of PCE to the ground water will be minimized. Ground water will be addressed during the post-closure plan care period.

All provisions of the closure plan (Weston's March 31, 1992, document) could not be adhered to during the construction of the cover system. Three specifications were presented with conflicting instructions and are as follows:

- Section 2.2.3 discusses the final cover design and methods of construction that refers to a figure showing cross-sections of the cover. The excavation activities, discussed in Section 2.2.1.1, require that the excavation extend laterally approximately 1 foot beyond the limits of the former pit. Section 2.2.3.1 discusses that the clay layer is designed to extend 5 feet in each direction beyond the pit. The clay layer, as constructed, has the dimension of the former pit plus approximately 1 foot horizontally into native soil (9 feet wide and 14.5 feet long).

- Section 2.2.3.3 discusses that the clay layer be constructed with a 3 percent minimum slope to promote drainage away from the site. However, the figure referred to in Section 2.2.1.1 does not indicate any mound for the clay layer. The final surface of the clay layer is level, and the topsoil has been mounded to promote drainage. The cover system will be inspected quarterly.

- Section 2.2.3 states that the soil be compacted to at least 90 percent modified Proctor while the corresponding figure requires compaction to at least 95 percent of maximum dry density using the standard Proctor test. The in situ soil density exceeds both requirements.

The cover system was constructed in a manner that the above conflicting specifications will not affect the performance of the cover system. The cover system will perform in accordance with the performance standards, and all activities were conducted with the intent of conforming to the specification of the approved closure plan.

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Solid Waste Management
P.O. Box 27687 · Raleigh, North Carolina 27611-7687

James G. Martin, Governor
William W. Cobey, Jr., Secretary

William L. Meyer
Director

December 17, 1992

Mr. Steve Pegg
Director of Employee Relations
Asheville Dyeing and Finishing
Warren Wilson College Road
Swannanoa, North Carolina 28778

Reference: Receipt of Closure Certification
Former Hazardous Waste Underground Storage Tank
NCD 070 619 663

Dear Mr. Pegg:

The Hazardous Section has received Asheville Dyeing and Finishing's closure certification, dated December 11, 1992, for the closure of the former underground hazardous waste tank. The survey plat completed by a registered surveyor was submitted on December 16, 1992. A review of these items will be completed as soon as possible.

If you have any questions, please contact Rob McDaniel at (919) 733-2178.

Sincerely,

Jerome H. Rhodes, Chief
Hazardous Waste Section

cc: G. Alan Farmer, US EPA, Region IV
William F. Hamner
James A. Carter
Spring Allen
Gray Stephens
Yvonne Bailey
Robert C. McDaniel

File: Closure
Asheville Dyeing
and Finishing
NCD 070 619 663
59

State of North Carolina
Department of Environment, Health, and Natural Resources
512 North Salisbury Street • Raleigh, North Carolina 27604
Division of Solid Waste Management
James B. Hunt, Jr., Governor Telephone 919-733-2178 Jonathan B. Howes, Secretary

March 10, 1993

Mr. Steve Pegg
Director of Employee Relations
Asheville Dyeing and Finishing
Warren Wilson College Road
Swannanoa, North Carolina 28778

Reference: Former Hazardous Waste Underground Storage Tank
Certification of Closure
NCD 070 619 663

Dear Mr. Pegg:

The Hazardous Waste Section received certifications of closure from Asheville Dyeing and Finishing Company and the independent professional engineer on December 11, 1992. These certifications stated that the closure activities for the former hazardous waste underground storage tank were completed according to the approved closure plan. Additionally, this office conducted a closure inspection on October 29, 1992 and found Asheville Dyeing and Finishing Company to be in compliance with the approved closure plan.

Your certifications of closure are hereby accepted.

A copy of this letter will be forwarded to the Waste Management Branch, who will address details concerning financial assurance for closure under a separate letter.

Asheville Dyeing and Finishing Company should implement the approved post-closure plan for the former hazardous waste underground storage tank.

P.O. Box 27687, Raleigh, North Carolina 27611-7687 Telephone 919-733-4984 Fax # 919-733-0513

If you have any questions, please contact Rob McDaniel at (919) 733-2178.

Sincerely,

William F. Hamner, Ph.D., Head
Permitting Branch

WFH/RCM/9.WP3

cc: G. Alan Farmer, US EPA, Region IV
James A. Carter
Jenny Lopp
R. James Edwards
Spring Allen
Gray B. Stephens
Yvonne Bailey
Robert C. McDaniel